

## 2.8 - Probability and Odds

Probability of an Event: a measure of the likelihood that the event will occur.

Outcomes: different possible results

Event: collection of outcomes

Favorable Outcomes: outcomes for an event you wish to have happen

Theoretical Probability =  $\frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$

Ex 1: You toss two coins. What is the probability P that both are heads?

HT  
~~TH~~

TT  
HH

$\frac{1}{4}$  or 25%

Ex 2: Our algebra class has 4 girls and 12 boys. One student is chosen at random from the class. What is the probability P that the student is a girl?

$$\frac{4 \div 4}{16 \div 4} = \frac{1}{4}$$

Experimental Probability =

$$\frac{\text{Number of favorable outcomes observed}}{\text{Total number of trials}}$$

Ex 3: You toss a six-sided number cube twenty times. For twelve of the tosses the number tossed was three or more. What is the experimental probability that the number tossed is 3 or more?

$$\frac{12 \div 4}{20 \div 4} = \left( \frac{3}{5} \right)$$

$$\text{Odds} = \frac{\text{Number of favorable outcomes}}{\text{Number of unfavorable outcomes}}$$

Ex 4: Find the odds of randomly choosing the indicated letter from a bag that contains the letters.

E; APPLE

1 to 4

Ex 5: Given the probability, find the odds. The probability of randomly choosing a club from a deck of cards is .25

$$\text{Odds} = \frac{\text{Probability event will occur}}{1 - (\text{Probability event will occur})}$$

$$\text{ODDS} = \frac{.25}{.75} = \boxed{\frac{1}{3}}$$



## Homework: 2.8 Worksheet